In The Claims

Please cancel claims 1-54 without prejudice, and add new claims 55-78.

Claims 1-54 (canceled).

55. (new) A conductive connection forming method comprising:

forming a first layer comprising copper over a substrate;

forming a second layer comprising a second metal different from copper over the first layer, the second metal comprising palladium;

incorporating at least some of the palladium into an intermetallic layer comprising the palladium and copper and having a thickness of from about 50 to about 150 Angstroms;

removing at least a portion of any second metal that is not incorporated into the intermetallic layer and exposing the intermetallic layer; and

forming a conductive connection directly to the intermetallic layer without a passivation layer therebetween.

56. (new) The method of claim 55 wherein the intermetallic layer consists of copper and palladium.

57. (new) The method of claim 55 wherein the incorporating comprises annealing the first and second layer at a temperature of greater than 400 to about 500 °C.

58. (new) The method of claim 55 wherein the first layer has an elevational thickness before the incorporating, further comprising removing any second metal not comprised by the intermetallic layer, and any portion of the intermetallic layer, beyond the elevational thickness.

59. (new) The method of claim 58 wherein the removing comprises chemical mechanical polishing.

60. (new) The method of claim 55 wherein a rate of removing the second layer compared to the intermetallic material comprises greater than 5 to 1.

61. (new) The method of claim 55 wherein the second layer consists of palladium.

62. (new) An oxidation protection method for metal-containing material during semiconductor processing, comprising:

forming a first metal-containing material over a substrate;

forming a second metal-containing material over the first metal-containing material;

annealing the first and second metal-containing materials at a temperature of greater than 400 to about 500 °C to form an intermetal material from some of the first material and at least some of the second material, the intermetal material having a thickness of from about 50 to about 150 Angstroms; and

after the annealing, exposing the intermetal material to conditions effective to oxidize the first metal-containing material but the intermetal material protecting at least some of the first metal-containing material from oxidation during the exposing.

63. (new) The method of claim 62 wherein the first metal-containing material consists essentially of copper, and the intermetal material consists of copper and palladium.

64. (new) An integrated circuit via forming method comprising:

forming a first level of integrated circuit wiring over a semiconductive substrate, the first wiring level comprising copper;

forming an intermetallic material at least partially within the first wiring level at a temperature of greater than 400 to about 500 °C, the intermetallic material comprising copper and palladium; and

forming a conductive via on and in electrical contact with the intermetallic material.

65. (new) The method of claim 64 wherein the forming the intermetallic material comprises:

forming a layer comprising the palladium on the first wiring level;

annealing the layer and first wiring level; and

removing at least some of any palladium not comprised by the intermetallic material and leaving a sufficient thickness of intermetallic material to reduce oxidation of the first wiring level where the via connects to the first wiring level.

66. (new) The method of claim 64 wherein the forming the conductive via further comprises forming a second level of integrated circuit wiring over the first wiring level during formation of the conductive via.

67. (new) The method of claim 64 wherein the first level consists of copper.

68. (new) The method of claim 64 wherein the intermetallic material consists of copper and palladium.

69. (new) An integrated circuit wire bond forming method comprising:

forming integrated circuit wiring and defining a bond pad in the wiring comprising a first metal;

forming an intermetallic material at least partially within the bond pad, the intermetallic material comprising the first metal and a second metal different from the first metal; and

forming a wire bond on and in electrical contact with the intermetallic material.

70. (new) The method of claim 69 wherein the forming the intermetallic material comprises:

forming a layer comprising the second metal on the bond pad;

annealing the layer and bond pad; and

removing at least some of any second metal not comprised by the intermetallic material and leaving a sufficient thickness of intermetallic material to reduce oxidation of the bond pad where the wire bond connects to the bond pad.

71. (new) The method of claim 69 wherein, after the defining, the bond pad is topographically below immediately surrounding structures.

72. (new) The method of claim 69 wherein the bond pad and the wire bond comprise copper.

73. (new) The method of claim 69 wherein the second metal comprises aluminum, titanium, palladium, magnesium, or two or more such metals.

74. (new) An integrated circuit wire bond forming method comprising:

forming integrated circuit wiring in an insulation material;

forming an opening in the insulation material and exposing at least some of the wiring;

forming a bond pad in the opening, the bond pad comprising a first metal, contacting the wiring, and having a surface topographically below immediately surrounding insulation material;

forming a layer on the bond pad surface, the layer comprising a second metal different from the first metal;

annealing the second metal layer and bond pad;

forming an intermetallic material at least partially within the bond pad, the intermetallic material comprising the first and second metals and having a surface over the bond pad topographically below immediately surrounding insulation material;

removing substantially all of any intermetallic material elevationally above the insulation material and leaving a sufficient thickness of intermetallic material over the bond pad to reduce oxidation of the bond pad; and

forming a wire bond in electrical contact with the intermetallic material over the bond pad.

75. (new) The method of claim 74 wherein the wire bond directly contacts the intermetallic material without a passivation layer therebetween.

76. (new) The method of claim 74 wherein the removing comprises chemical mechanical polishing.

77. (new) The method of claim 74 wherein the bond pad comprises copper and the second metal layer comprises at least one of aluminum and palladium.

78. (new) The method of claim 74 wherein the second metal layer comprises palladium.